

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/612,820	KATAYAMA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Zia R. Hashmi	2881	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 11/24/2003.
2. ☒ The allowed claim(s) is/are 1-18.
3. ☒ The drawings filed on 02 July 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

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|---|--|
| <ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br/>Paper No./Mail Date <u>7/24 &amp; 11/24/2003</u>.</li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</li> <li>6. <input type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date _____.</li> <li>7. <input type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input type="checkbox"/> Other _____.</li> </ol> |
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## **DETAILED ACTION**

### ***Allowable Subject Matter***

1. A "Preliminary Amendment" was received on November 24, 2003. Figures 1 and 3 have been amended, as indicated.

2. Claims 1-18 are allowed.

3. The following is an examiner's statement of reasons for allowance:

With respect to independent claims, prior art fails to disclose a three-dimensional structure verification supporting apparatus, or method, for supporting verification of an artificial three-dimensional structure verifying properness of a three-dimensional simulated image simulated in order to indicate a three-dimensional structure of a substance, comprising: first displaying unit for displaying an simulated three-dimensionally shaded model image assumingly indicating the three-dimensional structure of the substance by shading the three-dimensional simulated image; and second displaying the three-dimensional image of the substance acquired by experimental structural analysis, wherein the simulated three-dimensionally shaded model image and the experimental image rotate synchronously. Prior art also fails to disclose a recording medium storing a program for supporting verification of an artificial three-dimensional structure by verifying three-dimensional simulated image simulated in order to indicate a three-dimensional structure of a substance.

In the prior art, In order to study structural analysis of a substance with

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high spatial resolving power, it is indispensable to apply structural analysis method, such as X-ray diffraction or multidimensional NMR method, provided the substance is crystallized and the phase can be determined by isomorphous replacement, or the like. In particular, in case that a plurality of molecules form a complex substance, or in case the structure is changing during performance of a certain function, even if the structure of each molecule is known, there is no means for analyzing properly how the plurality of molecules are arranged, or how the molecular structure changes during performance of the function. In such a case, there is no choice but to build a virtual model presuming the most probable structure from existing circumstantial evidences. However, it has been impossible to verify the properness of the virtual model.

According to a first aspect of the present invention, there is provided a three-dimensional (3D) structure verification supporting method and apparatus for verifying properness of a 3D simulated image which indicates the 3-dimensional structure of the substance by means of display units, in the manner described above. In addition, the invention reveals a recording medium storing a program for supporting verification of an artificial 3D structure by verifying a 3D simulated image, so as to indicate a 3D structure of a substance. There are several other aspects of the invention, one of which includes a shape simulating module, which indicates outline of a substance using a plurality of image data of the substance captured from a plurality of angles.


Claims 2-6, 8-12, 14-15, and 17-18 are allowed by virtue of their dependencies on the independent claims 1, 7, 13, and 16.

**Conclusion**

5. Shinzawa discloses ( 6,349,273 ) an atomic coordinates generating method which provides rotation of these coordinates for image matching purposes.
6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments of Statement of Reasons for Allowance".
7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact Electronic Business Center (EBC) at 866-217-9197 (toll-free).
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zia Hashmi whose telephone number is (571) 272-2473. The examiner can normally be reached between 8.30 AM- 5 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477.

Zia Hashmi

April 6, 2004.

  
JOHN R. LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800